

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/009216

International filing date (day/month/year)
17.08.2004

Priority date (day/month/year)
18.08.2003

International Patent Classification (IPC) or both national classification and IPC
C07C7/13, B01J29/40

Applicant
VRIJE UNIVERSITEIT BRUSSEL

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE
 INTERNATIONAL SEARCHING AUTHORITY

International application No.
 PCT/EP2004/009216

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/009216

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	11,16
	No: Claims	1-10,12-15,17-23
Inventive step (IS)	Yes: Claims	11
	No: Claims	1-10,12-23
Industrial applicability (IA)	Yes: Claims	1-23
	No: Claims	

2. Citations and explanations

see separate sheet

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IAP20 Rec'd PCT/PTO 17 FEB 2006

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/EP2004/009216

Re Item V

Reference is made to the following documents:

- D1: EP-A-0 384 540 (SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V) 29 August 1990 (1990-08-29)
- D2: US-A-6 069 289 (DANDEKAR ET AL) 30 May 2000 (2000-05-30)
- D3: US-B1-6 281 406 (CAIN JOHN J) 28 August 2001 (2001-08-28)

The present application is directed to a method for separating mono-branched hydrocarbons e.g. from a mixture of hydrocarbons comprising bringing said mixture into contact with at least one adsorbent, thereby allowing the selective adsorption of said mono-branched hydrocarbons by said adsorbent, and desorbing said mono-branched hydrocarbons from said adsorbent, thereby allowing to selectively separate said mono-branched hydrocarbons.

D1 and D2 are considered to represent the closest prior art (cf. passages indicated in the ISR) and disclose the separation of hexane, 3-methylpentane and 2,3-dimethylbutane (D1) and 2,2-dimethylbutane, 2,3-dimethylbutane, 2-methylpentane and hexane (D2) using zeolitic adsorption materials.

Thus, the matter of claims 1-10 12-15 and 17-22 is not novel in view of D1 and D2. The matter of claims 23 is disclosed in D3 (cf. passages indicated in the ISR) and, therefore, the matter of claims 23 is also not novel in the light of D3.

However, the use of the special zeolite MCM-22 (claim 11) in a method for separating mono-branched hydrocarbons as well as the special ratio (claim 16) mono-branched/linear alkanes = 1/1 is not disclosed in the prior art.

However, the matter of claim 16 does not show any technical effect on which an inventive step can be based.

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